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Study finds higher levels of tungsten, cobalt in Fallon air

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The levels of tungsten and cobalt are distinctly higher in Fallon's air than in nearby communities, according a new study on the heavy metals investigated as possible culprits behind a leukemia cluster that has not been explained to date.

The researchers presented their findings at the University of Arizona in mid-November. Their work was funded by the Cancer Research and Prevention Foundation and the Gerber Foundation.

The study follows efforts by the Arizona scientists and other federal and independent investigators to pinpoint the cause of Fallon's leukemia cluster, a medical mystery which has sickened 17 children since 1997. Three have died.

The latest case, affecting a toddler, appeared in December 2004, two years after the last case was reported.

This report provides more depth and scientific evidence about the presence of the heavy metals in Fallon, said Mark Witten, a cancer researcher at the University of Arizona and one of the study's authors.

"The bottom line is that Fallon is uniquely different from Lovelock, Fernley, Yerington and Reno," Witten said. "It's different because it has more tungsten and cobalt in the air."

The results were based on dust samples collected in Fallon, Lovelock, Fernley, Yerington and Reno from mid-March to early April in 2004 and again in November 2004.

The work exceeds previous studies by federal agencies on airborne tungsten and cobalt particulate matter because of its scope and scrutiny, Witten said.

The study, accepted for publication in the scientific journal Applied Geochemistry, incorporated the use of 11 air samplers at one time around Fallon, he said.

The 2003 ATSDR study used only two, according the report.

"In my mind, this is the first credible study done because it met the criteria of anonymous peer review," he said.

The report says Kennametal, a manufacturer of tungsten-carbide products used in tools, referred to as the "hard-metal facility," could tentatively be considered a candidate source of the airborne metals.

The spatial patterns of tungsten and cobalt readings both had maximum loading at the sampling location located nearest to Kennametal's facility on North Taylor Street. Evidence suggests tungsten and cobalt come from a

single "point source." When high winds kicked up in Fallon, lower readings of tungsten were recorded.

Tungsten occurs naturally in Nevada, but cobalt is not abundantly natural in west-central Nevada, and no specific deposits of tungsten or cobalt are known near Fallon, according to the report.

However, the data shows more time variations in airborne metals than can be accounted for by wind speed alone, and the researchers do not know if emissions from Kennametal vary from time to time. The report concludes "it is not yet appropriate to conclude that the hard-metal facility is the source of the tungsten and cobalt exposure in the dust of Fallon."

Gary Peterson, plant manager for Kennametal in Fallon, said he feels the study doesn't cover a lot of new ground beyond what the Centers for Disease Control and the Agency for Toxic Substances and Disease Registry found in recent years.

HEPA filters were installed at the in-town manufacturing facility in 2001, and the refinery located 10 miles north of Fallon is self-contained and monitored by the Nevada Department of Environmental Protection, Peterson said. The amount of tungsten-laden dust emitted from the refinery is well within NDEP requirements, he said.

The magnitude of the study, measuring micrograms of heavy metals per cubic meter of air, is small, he said.

"I think there's plenty of data to see what's in the air and what's not," he said.

Peterson also said he doesn't have an issue with the researchers or their work.

"Our whole intent is that we've cooperated fully all along with the CDC and ATSDR," Peterson said. "There's nothing hidden in our plant. It's all public information available at NDEP."

Witten and other University of Arizona researchers are currently studying the exposure of pregnant mice to tungsten to see if their offspring are affected genetically, he said. The air-sampling techniques used in Fallon will also be put to the test in Elk Grove, Calif., and Sierra Vista, Ariz., sites of other leukemia clusters.

Elevated levels of arsenic and tungsten were reported in biological samples taken from Fallon residents by the Centers for Disease Control in 2002. When the results were presented at a town hall meeting, CDC officials said little was known about the health effects from exposure to tungsten.

Elevated levels of tungsten have also been found in local water supplies.

Witten and Paul Sheppard, a dendrochronologist from the university and the study's lead researcher, have taken tree core samples from Fallon and found tungsten. A study published by the National Institute of Environmental Health Sciences concluded that tungsten-alloy implants caused cancer in lab rats, but not specifically leukemia.

Preliminary data from S. Jill James, an Arkansas cancer researcher, suggests contaminants in the area, including tungsten/cobalt, may increase oxidative stress in the body, an imbalance in the body's antioxidant defense capacity which can lead to DNA damage, a known risk factor for leukemia.

Yet the link between airborne cobalt or tungsten exposure to leukemia is yet to be scientifically proven.

"We don't have any definitive scientific evidence that tungsten and cobalt are the cause of the leukemia cluster in Fallon," Witten said.

The Nevada Department of Environmental Protection is not planning an investigation, said spokeswoman Cindy Anderson.

In light of recent reports, NDEP may send someone to Kennametal to assess the operation, routine protocol after a report is made, Anderson said.

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